

# Appendix C2

## Air Quality Mitigation Plan

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## Appendix C2 – Operational Air Quality Mitigation Plan for the CCSP

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## Introduction

The Sacramento Metropolitan Air Quality Management District (SMAQMD) has developed guidance to mitigate operational emissions for projects subject to the California Environmental Quality Act.<sup>1</sup> SMAQMD's guidance recommends that project applicants prepare an Air Quality Mitigation Plan (AQMP) for all projects that exceed SMAQMD's operational significance thresholds of 65 pounds per day for reactive organic gases (ROG) and/or 65 pounds per day for nitrogen oxides (NO<sub>x</sub>).

If a project exceeds these thresholds, mitigation must be identified to reduce on-road mobile source emissions by 15 percent if the project is within the current State Implementation Plan (SIP), or by 35 percent if not within the SIP. Since the proposed Central City Specific Plan (CCSP) is included within the SIP, the 15 percent reduction applies to this project.<sup>2</sup>

## SMAQMD Guidance

The following steps are used to determine if a project meets the 15 percent reduction goal. The first step involves estimating total unmitigated ROG and NO<sub>x</sub> emissions using CalEEMod default values. Since this project includes a traffic analysis, the second step involves estimating mitigated ROG and NO<sub>x</sub> emissions using CalEEMod but adjusted for the vehicle miles traveled (VMT) estimates included in the project traffic report. Then, the decrease in ROG and NO<sub>x</sub> mobile source emissions between unmitigated and mitigated is calculated, and the difference is converted to NO<sub>x</sub> equivalents or NO<sub>x</sub>e. NO<sub>x</sub>e is the sum of NO<sub>x</sub> reductions plus one-seventh of ROG reductions. If the project meets the 15 percent NO<sub>x</sub>e reduction goal, it is considered consistent with the SIP.

## CCSP Emission Reductions

### CCSP Unmitigated Emissions

Unmitigated CCSP ROG and NO<sub>x</sub> emissions from mobile sources were estimated using the CalEEMod model (2016.3.1 version), which can be found in Table C2-1. With one exception, the unmitigated emissions have been estimated using CalEEMod default values. The only exception is that the daily trip generation rates are based on the trip rates included in the traffic study.

### CCSP Emissions after Implementation of all Design Features

The mitigated emission estimates were also estimated using CalEEMod, except that trip lengths were adjusted so that the CCSP's VMT estimates match those in the project traffic analysis. This approach matches SMAQMD's Off-Model Measure (TS: Traffic Study (meta-measure)) included

<sup>1</sup> Sacramento Metropolitan Air Quality Management District. Recommended Guidance for Land Use Emission Reductions, Version 3.3 (for Operational Emissions). Accessed May 2, 2017.

<sup>2</sup> City of Sacramento, 2015. *City of Sacramento 2035 General Plan Master Environmental Impact Report* (SCH No. 2012122006). Certified March 3, 2015.

in SMAQMD's AQMP guidance. The result of mitigated emission estimates can be found in **Table C2-1**.

**TABLE C2-1**  
**CCSP PERCENT REDUCTION OF MOBILE EMISSIONS OF NO<sub>x</sub>E**  
**WITH AND WITHOUT MITIGATION<sup>1</sup>**

Project	Unmitigated Emissions (ppd)			Mitigated Emissions (ppd)			Percent Reduction	Exceed 15%?
	ROG	NO <sub>x</sub>	NO <sub>x</sub> e <sup>2</sup>	ROG	NO <sub>x</sub>	NO <sub>x</sub> e <sup>2</sup>		
CCSP	302	1,179	1,222	65	260	269	78%	Yes

1. Operational emissions estimates for summertime conditions were made using CalEEMod 2016.3.1. See Appendix C1 for details.  
2. NO<sub>x</sub>e as defined by the SMAQMD is the reduction in ROG divided by 7 plus the reduction in NO<sub>x</sub>.

The traffic study (meta-measure) recognizes that site-specific information is better than information generated from a statewide model. Consequently, it recommends that if a project has a traffic study, then that study should be used in lieu of the CalEEMod model defaults to estimate unmitigated emissions.<sup>3</sup> SMAQMD's guidance states that traffic studies typically include calculations of internal trip capture, the mix of land uses, distances to job centers, and transit, walking, and cycling information. In lieu of using CalEEMod's built in mitigation measures, SMAQMD recommends that the project traffic study should be used instead. To do this, CalEEMod's default values (typically trip generation rates and trip lengths) are adjusted so that its VMT estimates are consistent with the traffic study, and adding any mitigation not accounted for in the traffic study. The VMT estimates for the CCSP were modeled using the Sacramento Area Council of Government's (SACOG) SACMET travel demand model.<sup>4</sup> SACMET accounts for several factors that reduce project VMT. These include:

- job accessibility (within a 30-minute drive or transit travel time),
- proximity to transit (distance to nearest light rail or bus station, in miles),
- availability of Class 1 and 2 bike lanes within and adjacent to the project,
- parameters that effect walking, including sidewalks and pedestrian paths and distances to transit, commercial, and related destinations,
- job and housing density (dwelling units and jobs per acre), and
- jobs and housing mix.

The CalEEMod default estimate of total VMT was revised to be consistent with the project-specific VMT estimates. Within CalEEMod, VMT estimates for each land use type are the product of trip generation rates times trip lengths. CalEEMod's default trip lengths were adjusted so that its VMT matched the project specific estimates.

<sup>3</sup> Sacramento Metropolitan Air Quality Management District. *Operational Emissions Mitigation*. <http://www.airquality.org/businesses/ceqa-land-use-planning/mitigation>. Accessed May 2, 2017.

<sup>4</sup> DKS Associates, 2017. Sacramento Downtown Specific Plan Traffic Study. March, 2017.

## AQMP Effectiveness

After modeling the unmitigated project emissions, SMAQMD recommends applying all feasible project mitigation and recalculating the daily summer emissions as NO<sub>x</sub>e. The effectiveness of the mitigation plan is then calculated as a percentage reduction from the unmitigated project, defined as follows:

$$\text{AQMP Effectiveness} = \frac{(\text{Unmitigated Project NO}_{x\text{e}} - \text{Mitigated Project NO}_{x\text{e}})}{\text{Unmitigated Project NO}_{x\text{e}}} \times 100$$

Using the SMAQMD Recommended Guidance for Land Use Emission Reduction,<sup>5</sup> the percent reduction of mobile emissions of NO<sub>x</sub>e after mitigation for the CCSP is presented in Table C2-1. The average daily trip lengths for each proposed land use were adjusted in the each mitigated CalEEMod run until the annual VMT matched those provided by DKS Associates for the CCSP.

As shown in Table C2-1, the CCSP would result in a 78 percent reduction in NO<sub>x</sub>e emissions after mitigation, respectively. The CCSP would achieve a 15 percent emission reduction/mitigation guideline established by the SMAQMD and would be consistent with the SIP.

<sup>5</sup> Sacramento Metropolitan Air Quality Management District, 2016. Recommended Guidance for Land Use Emission Reductions Version 3.3 (for Operations Emissions). September 26, 2016.